Weather Brew

NWS Milwaukee/Sullivan

Fall/Winter 2010

Volume 2, Issue 2

2010 Sees 42 Tornadoes in Wisconsin

By: Ashley Sears

Many Wisconsin residents are not surprised to see a sliver of lightning cut across the afternoon sky or to hear the booming of thunder overhead. But one, normally rare weather phenomenon, was a little less elusive this summer. On average, the entire state of Wisconsin records around 21 tornadoes in a given year. The southern portion of the state alone has recorded 21 tornadoes so far this year. Of the 21 tornadoes in the Milwaukee-Sullivan warning area, 2 were EF2, 11 were EF1 and 8 were EF0.

Wisconsin has observed 42 tornadoes total for 2010 through the end of August, of which 4 were EF2, 22 were EF1 and 16 were EF0. This puts 2010 third all time for most tornadoes in a calendar year. Fortunately, no fatalities have been reported this year. This was hopefully in part due to good anticipation of these events and tornado warning lead time. However, the lack of any violent (EF4 and EF5) tornadoes and only a few strong tornadoes is the main reason people of Wisconsin remained largely unscathed.

Rank	Year	Tornadoes
1	2005	62
2	1980	43
3	**2010**	**42**
4	2008	38
5	1993	37
6	2004	36
7	1988	35
8	1994	35
9	1984	34
10	1964	33

Two events in southern Wisconsin produced 14 of the 21 tornadoes in the MKX County Warning Area; June 21 and July 22. On June 21, five were confirmed, the most destructive tornado of the night was an EF2 that devastated the Eagle area in Waukesha County. Hundreds of trees were completely blown over with the initial touchdown in the Old World Wisconsin area. Aerial photos the following day showed the trees laying in a cyclonic pattern, confirming the tornado. Continuing to the east, the tornado increased to 300 yards wide and ripped through a residential area just south of the city center, heavily damaging many homes. Some homes were even removed from their foundations. In addition to the Eagle tornado, touchdowns were recorded near Wiota in Lafayette County, Cross Plains in Dane County, Busseyville in

A home destroyed in Eagle, WI.

(continued on Page 2)

Inside this issue:

Tornado Season Cont.

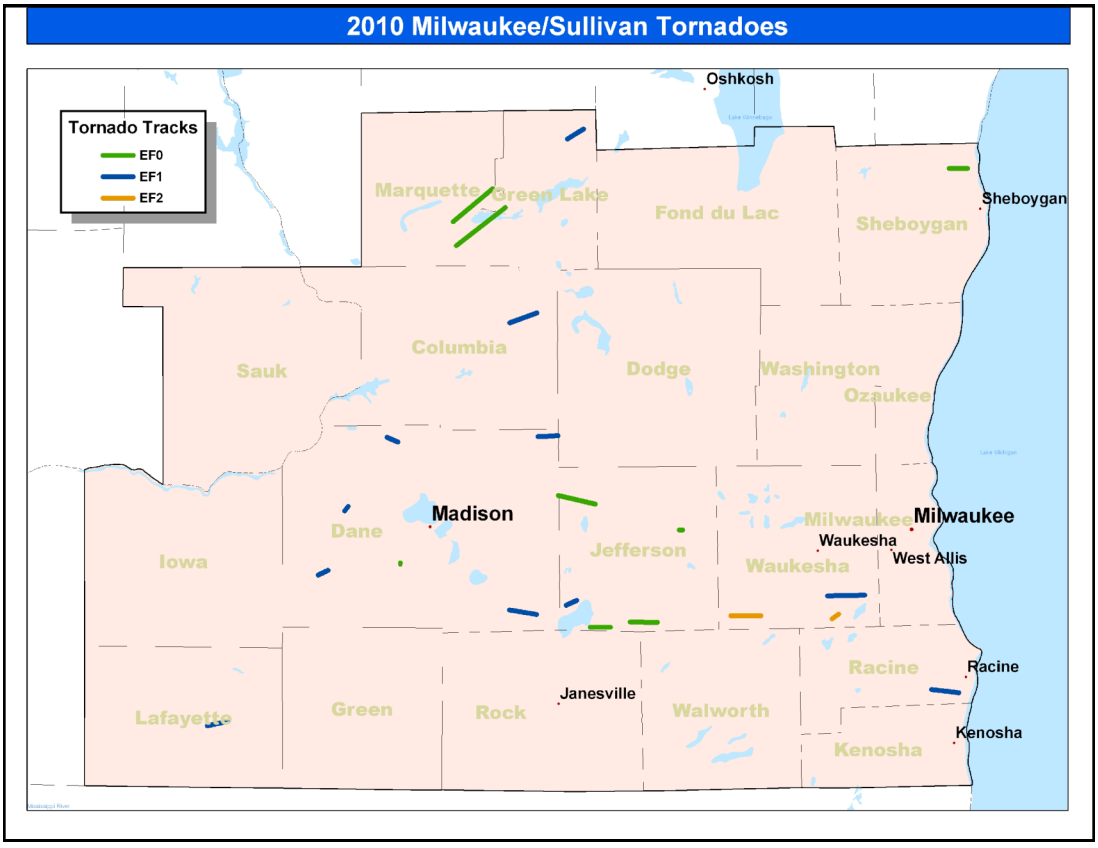
Jefferson County and in the Muskego area in Waukesha County. These tornadoes took down trees and did minor damage to some structures.

Multiple rounds of strong to severe weather also moved through southern Wisconsin on July 22, producing the largest tornado outbreak this year as well as major flash flooding in the Milwaukee Metro Area. Southern Wisconsin was hit hard during the late afternoon into evening hours as two lines of severe storms maneuvered from southwestern Wisconsin eastward, eventually crossing into Lake Michigan. Although both lines were severe in nature, the first round produced the majority of the tornadoes, while the second round brought strong straight line wind damage and excessive rainfall, eventually leading to many flash flood reports around the area. Of the 10 tornadoes that formed, one was of EF2 strength, two were of EF1 strength, with the other seven being EF0. Numerous reports of crop, roof and tree damage were surveyed over a course of two weeks to determine the exact extend of these storms.

The strongest of the day was an EF2 that swept through residential properties on the south side of Big Bend. This tornado lasted for only a couple of minutes, yet completely destroyed a garage and overturned a trailer. In addition, 1 inch thick sheet metal, weighting 1600 lbs each were found dispersed around the yard. A neighbor reported to the NWS survey team of finding a metal tool box belonging to the person whose yard was affected.

Home pushed off its foundation in Eagle, WI.

Tornado activity diminished the second half of Summer with only one tornado in Wisconsin during August. A strong wind event pushed across the MKX County Warning Area on August 20th. A microburst with winds near 100 mph was observed near Green Lake in Green Lake County, destroying a boat pier and damaging another. In addition, roof damage was reported, a pontoon boat was overturned and dozens of trees were uprooted. To provide perspective, hurricane force winds begin at 74 mph, making these winds almost a Category 2 hurricane. This microburst is a reminder that straight line winds can be just as damaging as tornadoes in some cases.



2010-2011 Winter Preview: La Niña

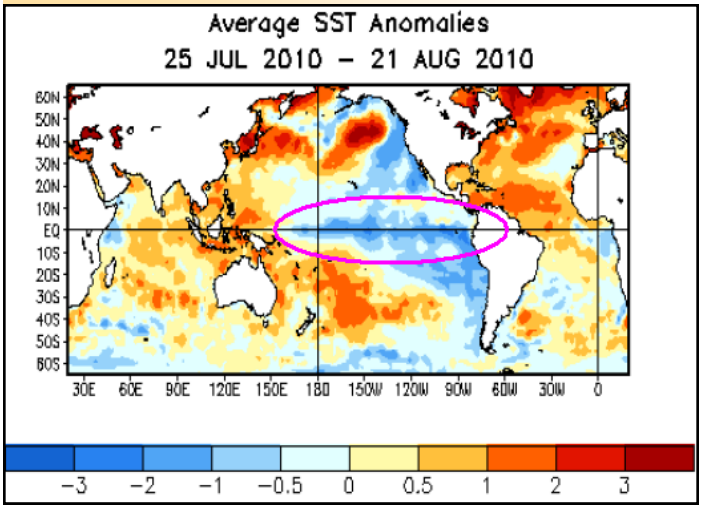
By: Chris Franks

The El Niño Southern Oscillation (ENSO) phenomenon contributes significantly to seasonal climate fluctuations in many regions of the globe, and the big news heading into this winter is the return of La Niña. The last La Niña was just a few years ago in 2007-08. This was also the winter in which many locations set their all time snowfall records in this part of the county. The Milwaukee airport officially recorded 99.1 inches, and the Madison airport cracked the century mark with 101.4 inches.

According to the Internal Research Institute for Climate and Society:

> "Weak La Niña conditions emerged in mid-June 2010, and increased to moderate strength by mid -July. For the August-October season currently in progress, there is an approximately 96% prob ability for continuing La Niña conditions, and a 4% probability for returning to neutral ENSO conditions. Probabilities for La Niña conditions continue at more than 90% through the remain der of 2010 and in the 80%-90% range during the early months of 2011."

We are expecting a La Niña this winter...fresh off the heels of last winters El Nino. Below is a map showing the cooler waters forming in the Equatorial Pacific (area within the magenta circle.)



- **Difference between La Niña and El Niño.**

El Niño and La Niña are extreme phases of a naturally occurring climate cycle referred to as ENSO. Both terms refer to large-scale changes in sea-surface temperature across the eastern tropical Pacific. Usually, sea-surface readings off South America's west coast range from the 60s to 70s F, while they exceed 80 degrees F in the "warm pool" located in the central/western Pacific. This warm pool expands to cover the tropics during El Niño, but during La Niña, the easterly trade winds strengthen and cold upwelling along the equator and the West coast of South America intensifies. Sea-surface temperatures along the equator can fall as much as 7 degrees F below normal.

- **How often does La Niña occur?**

El Niño and La Niña occur on average every 3 to 5 years. However, in the historical record the interval between events has varied from 2 to 7 years. According to the National Centers for Environmental Prediction, since 1975, La Niñas have been only half as frequent as El Niños.

- **What are the U.S. impacts of La Niña?**

La Niña often features drier than normal conditions in the Southwest in late summer through the subsequent winter. Drier than normal conditions also typically occur in the Central Plains in the fall and in the Southeast in the winter. In contrast, the Pacific Northwest is more likely to be wetter than normal in the late fall and early winter with the presence of a well-established La Niña. Additionally, on average La Niña winters are warmer than normal in the Southeast and colder than normal in the Northwest.

August 2010 summary from the Climate Prediction Center (CPC):

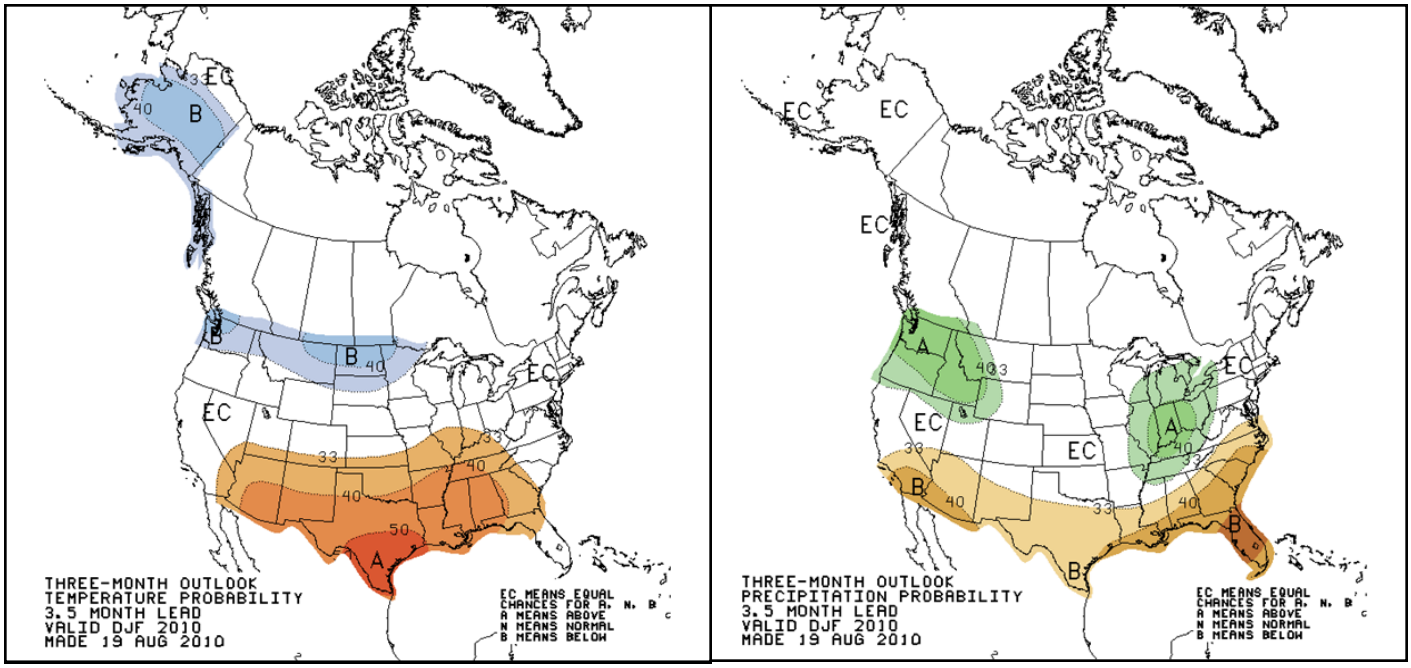
•La Niña conditions are present across the equatorial Pacific.

•Negative sea surface temperature anomalies persist across much of the Pacific Ocean.

•La Niña conditions are likely to continue through early 2011.

2010-2011 Winter Preview Cont.

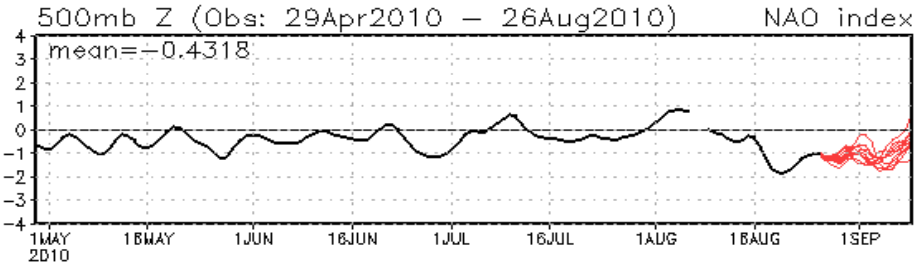
Below are the latest forecasts for the months of December, January and February for temperature and precipitation from the Climate Prediction Center.



The winter outlook indicates a stronger signal and thus greater confidence in having above average precipitation and snowfall (image above and to the right) in Wisconsin. This forecast also suggests the best chances for above normal precipitation are across the Ohio Valley (green shading). The image above and to the left is the temperature outlook, and Wisconsin finds itself in between increased chances for cooler than normal winter conditions in the far Northern Plains and expected warmer than normal weather in the southern US. The weather in Wisconsin is also sensitive to the phase of the NAO. A positive NAO is good for warmer Winters and a negative NAO favors colder Winters. These patterns are difficult to forecast more than 2-3 weeks in advance.

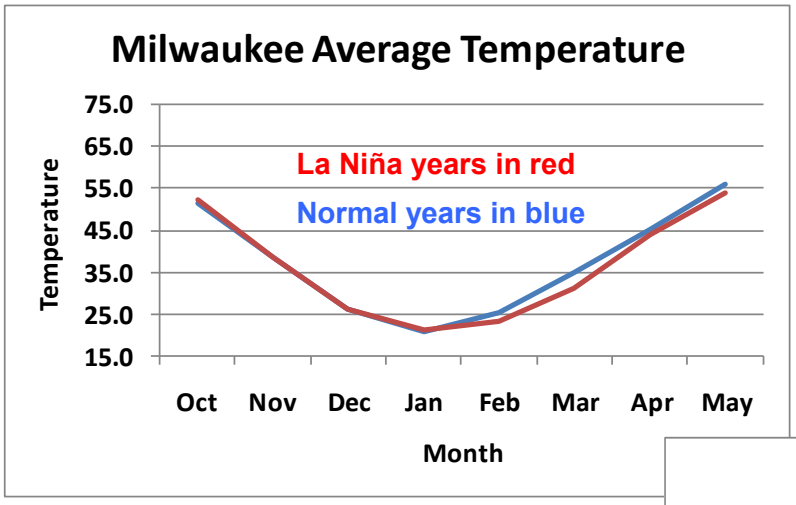
Other factors besides La Niña:

- AO (Arctic Oscillation)
- NAO (North Atlantic Oscillation)
- PNA (Pacific North American Pattern)



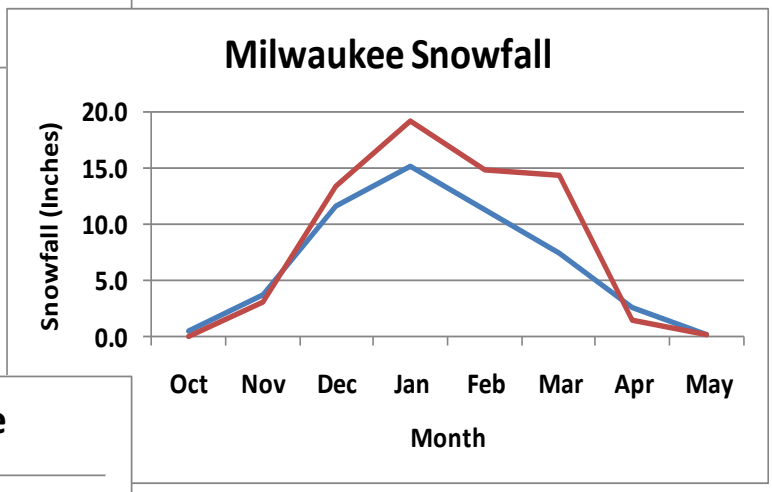
Follow along with the latest NAO phase and other patterns be going to:
http://www.cpc.noaa.gov/products/precip/CWlink/daily_ao_index/teleconnections.shtml

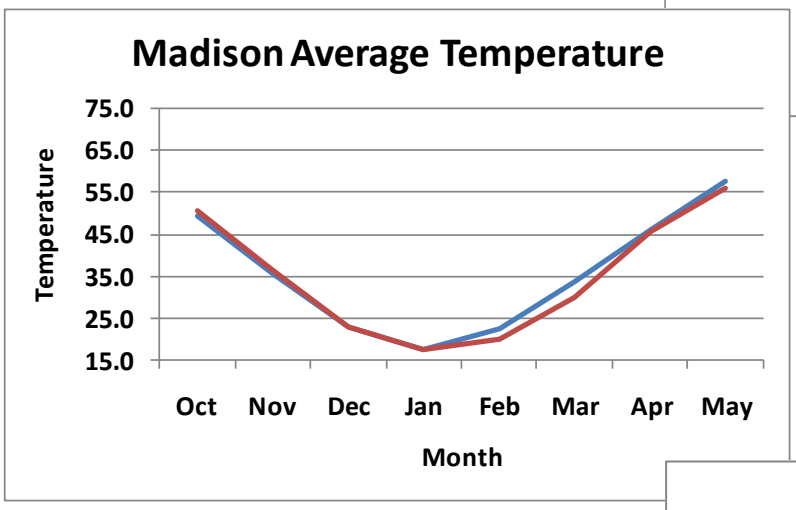
2010-2011 Winter Preview: La Niña vs. Normal



For Milwaukee, average temperatures tend to be slightly above normal for the summer months. Autumn and winter through January tend to be near normal. However, February and March tend to show slightly below normal average temperatures.

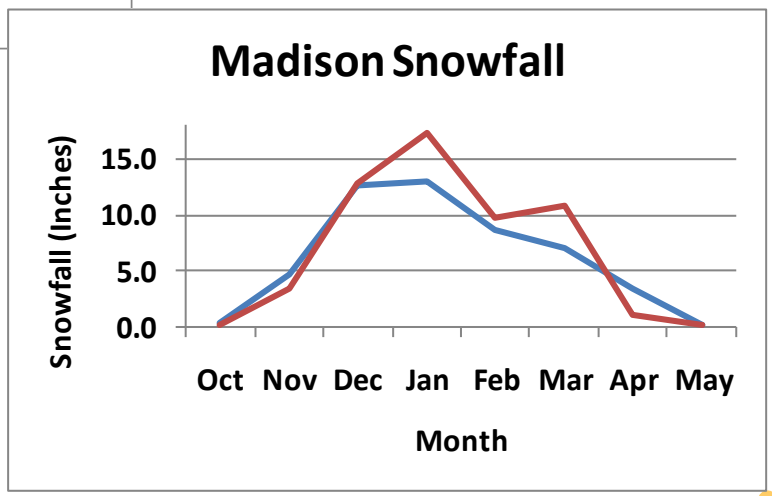
For Milwaukee, snowfall tends to be near normal for the October and November months. December tends to be slightly above normal, with January through March being well above normal for snowfall. April tends to be slightly below normal.





For Madison, the trends were similar to Milwaukee. Average temperatures tend to be slightly above normal for the summer months. Autumn and winter through January tend to be near normal. However, February and March tend to show slightly below normal average temperatures.

For Madison, the trends are similar to Milwaukee. Near normal snowfall tends to occur in October, slightly below normal in November, and near normal in December. Like Milwaukee, the January through March period is above to well above normal for snowfall, with April below normal.



Summer Student Volunteers

By: Penny Zabel

Summer break often provides an opportunity for college students to get into the field and get some work experience in their chosen field of study. At MKX, we had four students participate in the summer volunteer program this year.

Two of these students are from the University of Wisconsin, Milwaukee; Jason Palleria is finishing undergraduate classes this summer and hopes to get a job with the NWS in the near future, and Michael Hansen will graduate in May 2011. Laura Schutte, also a senior meteorology student planning to graduate in May 2011, attends the University of Northern Illinois. Our final volunteer, Justin Weber attends the University of North Dakota and will be a sophomore this fall.

These four volunteers have done a wonderful job of writing informational Top News stories for our website. One big project that all four students worked on was to update our extensive severe weather spotter database to reflect the hundreds of new spotters we picked up in Spring 2010. They have also had the opportunity to sit with the meteorologist on operational shifts to learn some of the daily tasks of the meteorologists. When schedules line up correctly, students also got the opportunity to experience a severe weather event.

The goal of the summer volunteer program at the NWS office is to help the students prepare for a future job in the NWS and also get them experience that will hopefully help them break into the highly competitive meteorology job market.

NWS Websites On The Go

By: Steve Davis, Senior Forecaster

Smartphones, PDAs and other hand held wireless devices have exploded in popularity and sophistication over the last couple of years. This has resulted in a rapid increase in demand for weather information while, "on-the-go." The National Weather Service does offer a web page for our customers to retrieve a large suite of weather forecasts and other information while on the road or away from the PC. For instance, you can access your local 7 day forecast, winter and summertime watches, warnings, advisories, radar data, surface weather observations and satellite imagery, to name a few.

You can use either of the following URL's to access your complete weather forecast:

HTTP enabled wireless devices: mobile.weather.gov

WAP enabled wireless devices: cell.weather.gov

There are also many private sector companies that offer both free and subscription services for detailed weather information for your mobile device. Currently, the National Weather Service does not offer text messaging services to alert of newly issued watches or warnings for your location. However, many of private sector partners do.

A simple web search will supply you with links to these providers. One popular source you may want to explore are the local TV and radio stations serving your area, they often send out local news and weather alerts. These weather alerts have traditionally been through email and text messaging, but increasingly, one can sign up to receive a recorded phone call.

Get audio weather forecasts and observations anytime from our automated forecast line!

(262) 965-2074

Remote Sensing

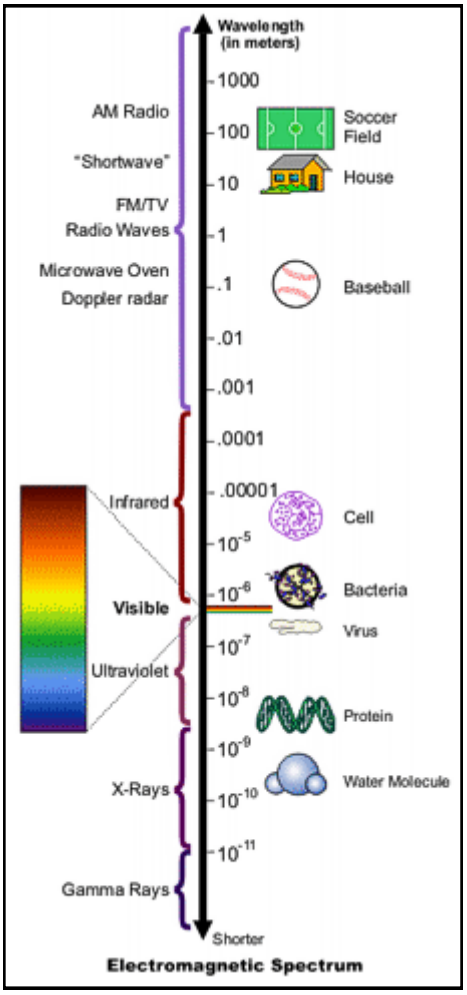
Remote sensing is the science of obtaining information about a subject or object without actually being in contact with that subject or object. In the National Weather Service remote sensing equipment is used in the detection and measurement of weather phenomena with devices sensitive to electromagnetic energy such as:

- Light (satellite)
- Heat (infrared scanners on satellites)
- Radio Waves (Doppler radar)

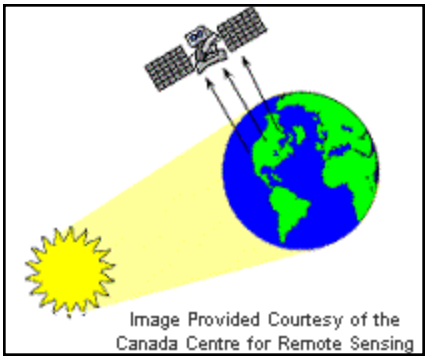
Remote sensing provides a unique perspective from which to observe large regions. These sensors can measure energy at wavelengths which are beyond the range of human vision. In this section we will discover the various methods the National Weather Service uses to help us derive forecasts, weather watches, and warnings.

Electromagnetic (EM) Waves

Electromagnetic waves are invisible forms of energy that travel though the universe. However, you can "see" some of the results of this energy. The light that our eyes can see is actually part of the electromagnetic spectrum. This visible part of the electromagnetic spectrum consists of the colors that we see in a rainbow - from reds and oranges, through blues and purples. Each of these colors actually corresponds to a different wavelength of light.

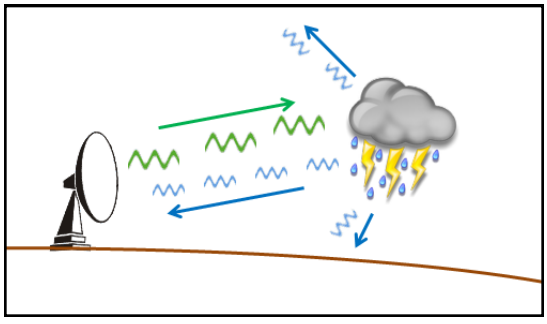


How Does Satellite Remote Sensing Work?



Satellites typically use a method known as **passive remote sensing** There are two basic types of sensors: passive and active sensors. Passive sensors record radiation reflected from the earth's surface or atmosphere. The source of this radiation must come from **outside** the sensor; in most cases, this is solar energy. Because of this energy requirement, passive solar sensors can only capture data during daylight hours.

How Does Radar Remote Sensing Work?



Radar uses **active remote sensing**. Active sensors are different from passive sensors. Unlike passive sensors, active sensors require the energy source to come from **within** the sensor. The radar sends out pulses of EM energy, which reflect off objects in the atmosphere and return back some of the energy to the radar. For more information on radar visit:

http://www.crh.noaa.gov/mkx/?n=using-radar

Summer Rains

By: Ashley Sears

This summer not only brought above normal temperatures and humidity higher than what we've seen in recent years, but it was one of the wettest summers in southern Wisconsin history. This summer (June, July and August) ranks second all time for highest rainfall measured in Milwaukee and fifth for Madison.

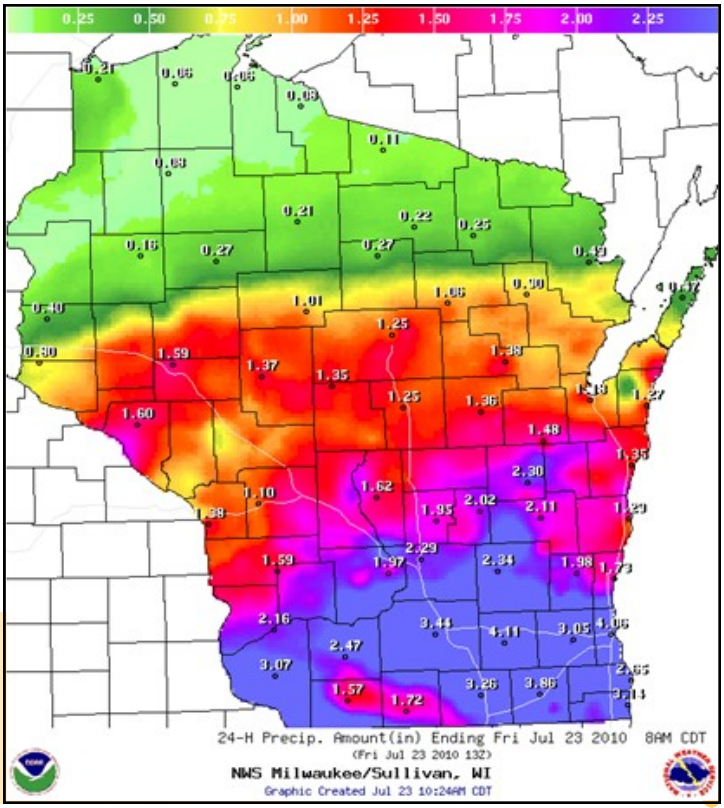
Summer Rainfall: Milwaukee			Summer Rainfall: Madison		
Rank	**Year**	**Total**	**Rank**	**Year**	**Total**
1	1986	19.48	1	2007	22.69
2	**2010**	**19.38**	2	1993	21.58
3	1885	18.11	3	1880	21.21
4	1997	17.52	**4**	**2010**	**20.28**
5	1954	17.27	5	1950	19.86
6	2008	16.35	6	1883	19.20
7	2000	15.71	7	1885	18.82
8	1938	15.60	8	1884	18.30
9	1977	15.59	9	2008	17.96
10	1987	15.48	10	1882	17.29

Even with a dry August (around two inches below normal) in Madison and Milwaukee, June and July brought enough rain to more than compensate for the late summer drying. July became the wettest on record for Milwaukee with 10.93", beating the old record by almost three inches.

Severe thunderstorms moving through central and southern Wisconsin July 14 and 15 produced damaging winds and heavy rains. Between two and six inches of rain fell as multiple rounds of storms impacted areas generally north of Interstate 94, plus Sauk county. Some locations in Sauk county received more than 5 inches of rain, washing out roads. A second bullseye of heavy rain was in Waukesha and Milwaukee counties where some locations received 4 to 5 inches of rain. Contrast this with zero recorded precipitation in many locations along the Wisconsin/Illinois state border!

Just one week later, on July 22, Milwaukee measured 5.61 inches of rain for the day, breaking the previous record by more than four inches. This one-day rainfall total now ranks second in Milwaukee all time. Madison also recorded a daily record of 3.61 inches. Some locations north of downtown Milwaukee recorded 7 inches of rain in just two hours! The heavy rains flooded hundreds of streets and homes in Milwaukee and resulted in a sink hole 20 feet deep that swallowed a car. Mitchell Airport had to be closed due to the flooded runways and Milwaukee County was issued a Declaration of Major Disaster.

Sinkhole in Downtown Milwaukee



Analysis of rainfall from 7am July 22 through 7am July 23.

MKX Participates in GOES Proving Ground

By: Penny Zabel

The NWS and its partners are constantly working to enhance technology and available data to improve the accuracy of forecasts and warnings. This summer, we have been working closely with scientists at CIMSS (Cooperative Institute for Meteorological Satellite Studies) and the University of Wisconsin on a project evaluating new products being derived from satellite data.

Every Tuesday and Thursday this summer, a scientist from CIMSS has visited our office to work with one of our meteorologists on the new products under development for the next generation of geostationary weather satellites.

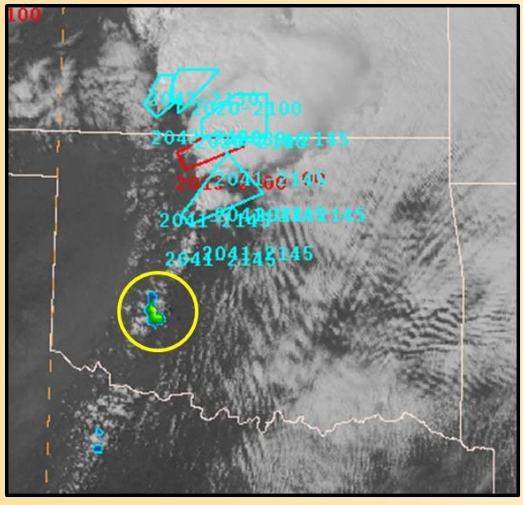
As part of the interaction, we examine a "cloud top cooling" and "convective initiation" indicator. The goal of both of these products is to detect developing thunderstorms earlier than can be done currently. This could lead to better short-term forecasts and more timely warnings.

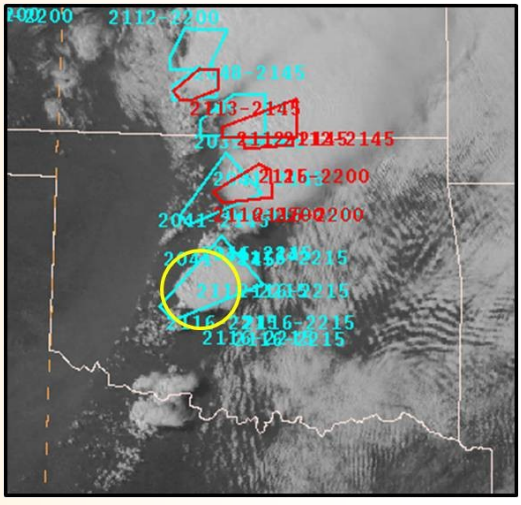
As a cumulus cloud is growing, it typically expands upward. With increasing height, the clouds cool, and this can be detected via satellite. The cloud top cooling algorithm being developed by CIMSS will highlight locations where the clouds are cooling quickly, and thus are growing vertically. This generally indicates an updraft in the cloud. Updrafts are particularly vigorous in thunderstorms which have very cold cloud tops. There has also been research showing a correlation between the rate of cloud top cooling and the severity of a thunderstorm.

The convective initiation indicator is similar to the cloud top cooling product, but is triggered at a certain threshold of cooling rate. Convective initiation (CI) is detected in three phases: Pre-CI, CI Likely and CI Occurring. The Pre-CI phase of cloud growth occurs when the cooling rate criteria has been reached, but the cloud is still warm enough that it consists completely of small water droplets. CI likely indicates that there is a mix of water droplets and ice crystals. CI occurring is when the cloud is largely thick ice crystals or super cooled water. This is a good indicator of thunderstorms because ice is generally necessary within the cloud for lightning to occur.

With these products, the hope is to increase accuracy of when and where thunderstorms are occurring, possibly before they are showing up on radar.

Another technique that is helpful in assessing thunderstorm potential is known as nearcasting. Nearcasting uses observations of water vapor from satellites combined with wind information from numerical models to determine the distribution of water vapor over the next few hours. Typically, increasing water vapor heightens the potential for strong thunderstorms and heavy rainfall. This information gives forecasters an early look at broader regions which are favorable for storm development up to nine hours in advance. The nearcasting is an innovation which is expanding in use at the Aviation Weather Center and Storm Prediction Center.





An example of a cloud top cooling product on the left. Within the yellow circle is an area tagged for enhanced cloud top cooling. This image is at 345pm on May 10, 2010 over Oklahoma. 30 minutes later, a severe thunderstorm warning was issued for this storm cell. This storm later had a tornado warning issued.

Rusty's Roundup

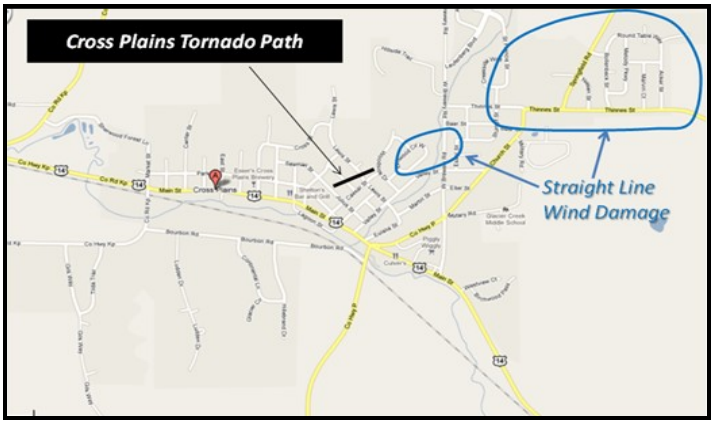
By: Rusty Kapela, Warning Coordination Meteorologist

Why would anyone spend time conducting damage surveys? Aren't there better ways to spend our time? So a tornado occurred – so what? What do you do with that information? Who cares if large hail damaged some crops, or strong thunderstorm winds toppled some large trees, or a hurricane-related, flash flood washed out a few roads? Why worry about this stuff?

All of the above are good questions – but the NWS is tasked with the responsibility of issuing short-fuse, convection severe weather warnings such as Tornado Warnings, Severe Thunderstorm Warnings, and Flash Flood Warnings. The U.S. Congress wants to know how well the NWS performs in warning situations – was a warning issued prior to the start of the severe weather event (POD = Probability of Detection), and what was the lead time in minutes? Therefore, the NWS needs to search for and document storm damage in order to calculate various performance statistics. Obviously, the NWS wants to improve its warning performance. However, you don't know where you are heading unless you can measure where you are now.

Besides being used by the U.S. Congress, the NWS warning performance statistics are utilized by university researchers and the insurance industry to calculate the risks of different types of severe weather in local areas. This risk is translated into residential and business hazard insurance premium rates that you and I pay. The local building techniques that the construction industry uses reflects the local risk of severe weather hazards. Do you see how this is all connected?

After a severe weather episode has ended, the NWS will send out small teams of meteorologists or other staff members to examine the damage left behind. These teams will take pictures, question eye-witnesses for detailed information, decide what kind of severe weather occurred, and determine the exact beginning and ending **time and location** of the severe weather event. Of course, they will utilize radar imagery and other resource material to determine what occurred and other characteristics such as tornado strength (EF-rating), estimated wind speeds, diameter of hail stones, locations, times, etc.



Additionally, damage surveys are conducted by Emergency Managers, and FEMA (Federal Emergency Management Agency) employees in order to determine the number of homes, businesses, and farms damaged by severe weather events. These people also generate a preliminary, monetary, loss estimates that are used to determine if a community qualifies for some kind of federal assistance. However, Emergency Managers will usually differ to NWS meteorologists in deciding whether an event was a tornado or just strong, downburst, straight-line winds. Information gathered in damage surveys is then compiled into "Local Storm Report" messages that are sent to all media outlets, Emergency Managers, and our web site.

Spotter and public reports of severe weather are vital to the operations of the NWS office, both during and after the event. If you want to submit a storm report, please include the time, location, reference to the nearest city, and specify if you are a trained spotter or not. If you are including a picture please note the direction in which the photo was taken. Reports can be emailed to:

w-mkx.webmaster@noaa.gov.

Rusty Kapela, Warning Coordination Meteorologist

Find It On Our Web Site

By: Marc Kavinsky, Senior Forecaster

The availability of the National Weather Service's National Digital Forecast Database (NDFD) allows users of our data to create forecasts in different formats including text and graphics. The NDFD is a seamless mosaic of digital forecasts from NWS field offices working in collaboration with the National Centers for Environmental Prediction. For more information on the NDFD, check out www.nws.noaa.gov/ndfd. This data is available to users in southern Wisconsin on the website of the Milwaukee/ Sullivan NWS office. www.weather.gov/mkx.

The availability of the NDFD database offers another substantial benefit. By using the weather forecast interface on our website you can create an **hourly** forecast for a 1.5 mile grid point, of most common forecasted weather elements including temperature, dewpoint, wind direction and wind speed, precipitation chance and amount of precipitation.

To access this feature on our website, you first need to click on a desired location on the "point and click" map of southern Wisconsin on the main page of our website..

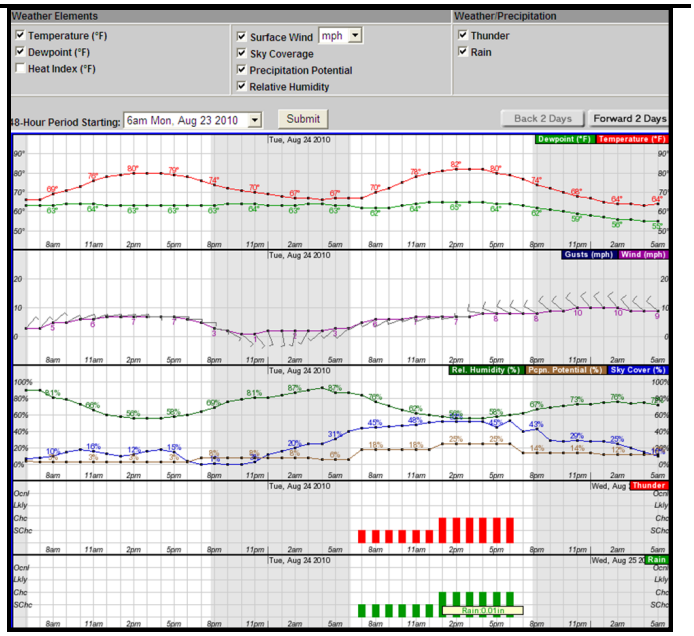
The seven day forecast in text and icons for the selected location will then appear in the web browser.

Scroll down to the "Additional Forecasts and Information" section and click on the "Hourly Weather Graph".

A chart displaying a 48 hour forecast for a series of default weather elements will then appear in a browser window.

The 48 hour forecast window can be adjusted by using the pull-down menu toward the top of the display to select the forecast start time, and then clicking on the "submit" button. You can also change the forecast start time by clicking on the "Forward 2 days" or "Back 2 days" buttons located to the right of the start time pull down menu.

Use the "Weather Elements" section at the top to choose which elements you would like to view. Note you can adjust the forecasted wind speed units by using the pull down menu next to "Surface Wind".



This hourly weather graph allows users of our data to get a better feel of the diurnal temperature trend, daily dewpoint and relative humidity variability, and most importantly how wind speed and direction will be changing in an easy to use graphical format.

If you prefer your hourly forecast in a tabular text format, simply scroll down to the "Additional Forecasts and Information" table and click on "Tabular Forecast". The forecast data will then appear in a table format as depicted below.

Date	08/29												08/30											
Hour (CDT)	12	13	14	15	16	17	18	19	20	21	22	23	00	01	02	03	04	05	06	07	08	09	10	11
Temperature (°F)	84	85	86	86	85	84	84	83	80	78	77	76	75	75	74	74	73	73	72	73	75	78	80	82
Dewpoint (° F)	65	65	65	66	66	66	66	66	66	66	66	66	66	66	66	67	67	67	66	66	66	66	66	66
Wind (mph)	13	14	14	14	14	13	11	10	8	7	5	5	6	7	7	6	6	6	6	7	7	8	9	10
Wind Dir	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	S	S	S	S	S	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW
Gust																								
Sky Cover (%)	35	39	43	42	41	30	25	22	23	17	15	15	15	15	16	19	20	21	24	25	28	33	36	41
Pcpn. Potential (%)	7	7	7	7	7	7	7	1	1	1	1	1	1	1	1	1	1	1	1	15	15	15	15	15
Rel. Humidity (%)	53	51	50	51	53	55	55	57	62	67	69	71	74	74	76	79	81	81	81	79	74	67	62	58
Thunder	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	SChc	SChc	SChc	SChc	SChc
Rain	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	SChc	SChc	SChc	SChc	SChc

For marine users, hourly forecasts of Lake Michigan wave height are available in tabular and graphical format as well. You can retrieve this data by clicking on the desired location on Lake Michigan on the "point and click" map of southern Wisconsin and following the above steps.

MKX at 2010 EAA AirVenture

By: Marcia Cronce, Forecaster

The EAA AirVenture in Oshkosh, WI drew in around 535,000 spectators during the week of Monday, July 26 through Sunday, August 1. EAA is an organization comprised of members with a wide range of aviation interests and backgrounds. Each year, pilots, general aviation enthusiasts and anyone interested in watching planes do amazing stunts and fly-bys at daily air shows gather in droves at AirVenture. During that week, the Wittman Regional Airport in Oshkosh becomes the busiest airport in the world.

The Federal Pavilion, one of the many buildings on the AirVenture grounds, hosts numerous federal agencies from the United States, Canada and the Bahamas. The agencies, including U.S. Customs and Border Protection, FAA Aeronautical Navigation Services, National Guard Counterdrug Program, Transport Canada, NOAA Search and Rescue Satellite-Aided Tracking (SARSAT) System, U.S. National Park Service, Bahamas Customs and Civil Aviation Authority, and NOAA National Weather Service (NWS), are members of the International Federal Partnership, which all support the aviation community in various ways.

Visitors got to feel category 1 hurricane strength winds up to 79 mph in the Hurricane Simulator.

Representatives from different areas of NOAA's National Weather Service attend the EAA AirVenture each year. National Weather Service Headquarters out of Washington, D.C. supports a large booth in the Federal Pavilion. The booth contains many brochures explaining aviation services provided by the NWS, as well two computer kiosks with access to the numerous NWS weather websites. In addition, there was a hurricane simulator and a tabletop tornado machine. There were many employees from the Wisconsin NWS Weather Forecast Offices, including Milwaukee/Sullivan and Green Bay that staffed the booth. Some employees of the Aviation Weather Center from Kansas City, MO and the NWS Headquarters also worked at the booth. We answered many questions and received face-to-face feedback from the various customers.

National Weather Service staff answered many questions from various customers and promoted NWS services and resources for the public and aviation communities.

Fair Winds and Following Seas

Meteorologist Intern and Weather Brew Co-Editor Chris Franks is leaving Sullivan. Chris has accepted a journeyman forecaster position at the Minneapolis forecast office, located in Chanhassen, Minnesota. Chris came to the Sullivan office as an intern around three years ago from Rapid City, South Dakota where he completed his Masters Degree thesis at the South Dakota School of Mines and Technology, and worked as a part-time meteorologist for a local television station. During his time here at Sullivan, Chris has rapidly learned and mastered the requirements needed as a journey forecaster and has made numerous positive contributions to our office, including Co-Editor of this newsletter. As Chris and his wife Ashley begin a new chapter in their careers and lives in Minnesota, we bid them farewell and wish them both continued success and happiness. Well done Chris!

COOP Corner

Service Awards Presented

By: Rudy Schaar, Data Program Manager

The City of Fond du Lac Waste Water Treatment Facility is presented the 50 year Honored Intuition Award. Since 1960, members of the operations and maintenance staff have diligently observed and reported temperatures, precipitation and snowfall information to the Milwaukee/Sullivan office. Pictured from left to right are Curt Giese, Gary Delter (holding plaque), John Gremminger, Paul Rawlsky, Mary Kunde, Joe Ditter, Mark Haensgen, and Jim Streholski. WFO Milwakee/Sullivan congratulates the Fond du Lac Waste Water Treatment Facility and looks forward to a long and fruitful association.

Mr. Alan Wire is presented a longevity award from the National Weather Service for Ten Years of Service as the COOP observer for the Village of Argyle located in Lafayette County Wisconsin. Mr. Wire also received a Certificate of Recognition for Exemplary Performance and Dedication as a Cooperative Weather Observer.

David Hornischer of the Portage Waste Water Treatment Facility accepts an Honor Institution Award for 25 years of Service as a Cooperative observer. Pictured from left to right are Plant Supervisor, Skip Poster and Plant Operator David Hornischer. The City of Portage has actually been involved in the COOP program since 1888 when they began reporting the Wisconsin River level measured at the locks located on Cannel Street which served as the portage between the Wisconsin River and the Fox River.

All of our COOP observers are instrumental in the daily operations of the NWS office, and we thank each of our more than 80 co-op observers in southern Wisconsin!

Comments and suggestions are always welcome. Your feedback is very important to us!

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